

Amendment to the Claims

Please cancel claims 72-74 without prejudice to pursuing these claims in a continuation, divisional, continuation-in-part or other application. Following is a complete listing of claims, as amended:

1-58. (Cancelled)

59. (Original) A method of making a microelectronic device, comprising:
forming active devices at least proximate to a first surface of a microelectronic substrate,
the microelectronic substrate having a second surface facing opposite the first
surface, the second surface having a projected area; and
removing material from the second surface of the microelectronic substrate to form heat
transfer surface features, wherein a surface area of the second surface including
the heat transfer surface features is greater than the projected area.

60. (Original) The method of claim 59 wherein removing material from the second
surface includes etching grooves in the second surface.

61. (Original) The method of claim 59, further comprising disposing a thermal
conductor within at least some of the recesses formed by removing material from the second
surface.

62. (Original) The method of claim 59, further comprising coupling an enclosure
member to the second surface.

63. (Original) The method of claim 59, further comprising coupling to the second
surface a sealed heat transport system having a sealed cavity and a thermal conductor disposed
within the cavity.

64. (Original) A method of making a microelectronic device, comprising:
forming active devices at least proximate to a first surface of a microelectronic substrate;
forming at least one recess in a second surface of the microelectronic substrate facing
opposite from the first surface;
disposing a thermal conductor in the at least one recess, wherein the thermal conductor is
not configured to provide electrical communication between the microelectronic
substrate and external components; and
sealably enclosing the at least one recess with the thermal conductor positioned and
configured to transfer heat from the active devices to a region external to the
microelectronic substrate.

65. (Original) The method of claim 64 wherein forming at least one recess includes
etching at least one groove.

66. (Original) The method of claim 64 wherein forming at least one recess includes
forming a plurality of grooves.

67. (Original) The method of claim 64 wherein disposing a thermal conductor
includes placing a liquid in a position to absorb heat from the microelectronic substrate, vaporize,
transfer heat to an enclosure member, and condense.

68. (Original) A method of making a microelectronic device, comprising:
forming active devices at least proximate to a first surface of a microelectronic substrate,
the microelectronic substrate having a second surface facing opposite from the
first surface, the second surface having a projected area;
forming heat transfer surface features integrally in the second surface of the
microelectronic substrate, wherein a surface area of the second surface including
the heat transfer surface features is greater than the projected area; and
attaching to the microelectronic substrate a heat transport system with a thermal
conductor configured to transfer heat from the active devices to a region external

to the microelectronic device, the heat transport system being in thermal communication with the heat transfer surface features.

69. (Original) The method of claim 68, wherein the thermal conductor is the second of two thermal conductors, and wherein the method further comprises disposing a first thermal conductor between at least some of the heat transfer surface features on the microelectronic substrate.

70. (Original) The method of claim 68 wherein forming heat transfer surface features includes forming a plurality of projections.

71. (Original) The method of claim 68 wherein attaching to the microelectronic substrate a heat transport system includes adhering the heat transport system to the microelectronic substrate with a nitride adhesive.

72-74. (Cancelled)

75. (Previously presented) The method of claim 59 wherein removing material from the second surface comprises forming heat transfer surface features that extend a distance approximately equal to one-third to one-half of a distance between the first and second surfaces of the microelectronic substrate.

76. (Previously presented) The method of claim 64 wherein:
forming at least one recess comprises forming a plurality of recesses; and
sealably enclosing the recesses comprises sealably enclosing the recesses such that the recesses are in fluid communication with each other.

77. (Previously presented) The method of claim 64 wherein disposing the thermal conductor comprises disposing a fluid in the at least one recess.

78. (Previously presented) The method of claim 68 wherein attaching the heat transport system comprises attaching the heat transport system to the second surface of the microelectronic substrate.

79. (Previously presented) The method of claim 68 wherein the thermal conductor is a liquid, and wherein attaching the microelectronic substrate comprises positioning the liquid to absorb heat from the microelectronic substrate, vaporize, transfer heat to the region external to the microelectronic device, and condense.

80. (Previously presented) The method of claim 68 wherein the thermal conductor is not configured to provide electrical communication between the microelectronic substrate and external components.